

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-20. (Canceled)

Claim 21. (New) A process for drying, separating, classifying, and decomposing waste products from at least one of a waste degassing and gasification process, comprising introducing solid waste products and waste gases wholly or partially in a funnel-shaped lower part of a shaft-shaped chamber, and at least one of simultaneously and subsequently introducing air and the waste gases from the degassing and/or gasification process separately into the chamber from below under pressure, the air is introduced into the chamber substantially axially and the waste gases are introduced into the chamber substantially tangentially, resulting in a rotationally symmetrical, fountaining eddying of the solid and gaseous substances in the chamber, and, subsequently or during continuous processing, dried, separated, classified, and substantially decomposed products are downwardly discharged from the chamber.

Claim 22. (New) The process according to Claim 21, wherein the substantially decomposed products comprise recoverable waste products comprising coke, ash, hydrocarbons, CO₂, CO, H₂, H₂O.

Claim 23. (New) The process according to Claim 21, wherein the air is introduced in a truncated-cone-shaped floor of the chamber axially through a round, double-walled part of a discharge shaft.

Claim 24. (New) The process according to Claim 21, wherein the air is at least one of preheated and introduced into the chamber under a pressure of 6-8 kPa.

Claim 25. (New) The process according to Claim 21, wherein the waste gases are introduced tangentially through openings in the funnel-shaped part of the chamber so that the gases encounter the introduced air in an area of the solids.

Claim 26. (New) The process according to Claim 21, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 27. (New) The process according to Claim 22, wherein the air is introduced in a truncated-cone-shaped floor of the chamber axially through a round, double-walled part of a discharge shaft.

Claim 28. (New) The process according to Claim 22, wherein the air is at least one of preheated and introduced into the chamber under a pressure of 6-8 kPa.

Claim 29. (New) The process according to Claim 23, wherein the air is at least one of preheated and introduced into the chamber under a pressure of 6-8 kPa.

Claim 30. (New) The process according to Claim 22, wherein the waste gases are introduced tangentially through openings in the funnel-shaped part of the chamber so that the gases encounter the introduced air in an area of the solids.

Claim 31. (New) The process according to Claim 23, wherein the waste gases are introduced tangentially through openings in the funnel-shaped part of the chamber so that the gases encounter the introduced air in an area of the solids.

Claim 32. (New) The process according to Claim 24, wherein the waste gases are introduced tangentially through openings in the funnel-shaped part of the chamber so that the gases encounter the introduced air in an area of the solids.

Claim 33. (New) The process according to Claim 22, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 34. (New) The process according to Claim 23, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 35. (New) The process according to Claim 24, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 36. (New) The process according to Claim 25, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 37. (New) The process according to Claim 27, wherein the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

Claim 38. (New) The process according to Claim 21, comprising regulating air- and waste gas flow rate.

Claim 39. (New) The process according to Claim 23, wherein in an area of the truncated-cone-shaped floor of the chamber, one or two truncated-cone-shaped components nested one inside another form one or two annular gaps that can be displaced with respect to one another and to the chamber floor so that the air is introduced axially through an annular gap and the waste gases are introduced tangentially through another annular gap.

Claim 40. (New) The process according to Claim 39, comprising regulating air- and/or waste gas flow rates by changing annular gap size.

Claim 41. (New) The process according to Claim 21, wherein the chamber is cylindrical, and initiating reaction in a start-up condition with a pilot burner arranged in the chamber, and ensuring constant maintenance of the reaction in an operating condition.

Claim 42. (New) Apparatus for drying, separating, classifying, and decomposing recoverable waste products, comprising:

- a shaft-shaped reaction chamber comprising a funnel-shaped floor;
- said floor comprising separate openings for entry of air and waste gases;
- said openings being arranged so that the air enters the reactor chamber substantially axially from below and the waste gases enter the reactor chamber substantially tangentially resulting in a rotationally symmetrical, fountaining eddying of the solid and gaseous substances in the chamber;

- an opening in said funnel-shaped floor of the reactor chamber serving to discharge dried, separated, classified, and decomposed products; and

- a gas discharge opening in an upper part of said reaction chamber.

Claim 43. (New) The apparatus according to Claim 42, wherein said recoverable waste products comprise recoverable waste products from at least one of a waste degassing and gasification process.

Claim 44. (New) The apparatus according to Claim 42, wherein said funnel-shaped floor of said reaction chamber is formed in a shape of a truncated cone or a shaft.

Claim 45. (New) The apparatus according to Claim 42, wherein said funnel-shaped floor of said reaction chamber comprises a truncated-cone-shaped part and further including a discharge shaft, and said truncated-cone-shaped part and the discharge shaft are constructed wholly or partially with double walls.

Claim 46. (New) The apparatus according to Claim 42, wherein the openings for the air and the waste gases in the truncated-cone-shaped part are arranged so that gas flows meet at least partially inside deposited solids.

Claim 47. (New) The apparatus according to Claim 42, wherein openings are of variable size.

Claim 48. (New) The apparatus according to Claim 44, wherein openings are formed by one or two truncated-cone-shaped components nested one inside another in the truncated-cone-shaped part of the chamber forming one or two annular gaps so that air flows through one annular gap and waste gases flow into the chamber through the other annular gap.

Claim 49. (New) The apparatus according to Claim 48, wherein the two truncated-cone-shaped components are displaceably arranged with respect to one another and to a wall of said reaction chamber.

Claim 50. (New) The apparatus according to Claim 42, wherein the opening for the waste gases is an annular gap cut laterally over 180°.

Claim 51. (New) The apparatus according to Claim 42, further comprising a discharge shaft including several openings into which classified end products can be separately discharged.

Claim 52. (New) The apparatus according to Claim 42, wherein a pilot burner is arranged in a cylindrical part of the chamber.

Claim 53. (New) A process for drying, separating, classifying, and decomposing waste products from at least one of a waste degassing and gasification process, comprising introducing solid waste products and waste gases wholly or partially in a funnel-shaped lower part of a shaft-shaped chamber, and at least one of simultaneously and subsequently introducing air and the waste gases from the degassing and/or gasification process separately into the chamber from below under pressure, the air is introduced into the chamber substantially axially and the waste gases are introduced into the chamber substantially tangentially or radially, resulting in a rotationally symmetrical, fountaining eddying of the solid and gaseous substances in the chamber, and, subsequently or during continuous processing, dried, separated, classified, and substantially decomposed products are downwardly discharged from the chamber.

Claim 54. (New) Apparatus for drying, separating, classifying, and decomposing recoverable waste products, comprising:

- a shaft-shaped reaction chamber comprising a funnel-shaped floor;

- said floor comprising separate openings for entry of air and waste gases from a degassing and/or gasification process;

- said openings being arranged so that the air enters the reactor chamber substantially axially from below and the waste gases enter the reactor chamber substantially tangentially or

radially resulting in a rotationally symmetrical, fountaining eddying of the solid and gaseous substances in the chamber;

an opening in said funnel-shaped floor of the reactor chamber serving to discharge dried, separated, classified, and decomposed products; and

a gas discharge opening in an upper part of said reaction chamber.